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RESPONSE TO COMMENTS ON DRAFT FINAL REMEDIAL INVESTIGATION REPORT SITE 28 NSWC INDIAN HEAD MD

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CH2MHILL

Response to Comments on Draft Final Remedial Investigation Report, Site 28

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Below, please find responses to comments received on the referenced document. Comments are presented as received, followed by CH2M HILL responses, which are shown in italics. Please review the responses to ensure they address your concerns.

Comments from Dawn Ioven/EPA Region III:

1. **GENERAL COMMENT** Potential risks to future commercial workers were not considered. This exposure scenario should be evaluated in the Baseline Risk Assessment.

   Response: *The Baseline Human Health Risk Assessment was prepared using conservative assumptions for reasonable, potentially complete exposure pathways based on current site conditions and current and potential future site usage. Site 28 is located in an area of the facility that could potentially be used recreationally (e.g., for fishing), but would not likely be used residentially, commercially, or industrially. Therefore, future commercial and industrial exposure scenarios were not considered in the risk assessment. Although unlikely, a future residential exposure scenario was considered, as a conservative approach and in accordance with Navy policy.*

   The Interim Deliverable 2, Human Health Risk Assessment for Indian Head Division, Naval Surface Warfare Center, Indian Head, Maryland, Site 28 (CH2M HILL, December 2003), which was provided to USEPA, MDE, NDWIH, and NAVFAC Washington, clearly identified the exposure scenarios being considered in the RI. The residential exposure scenarios considered in the RI create an upper-bound for estimates of risk to current/future Navy and non-Navy

commercial/industrial workers. Consequently, the evaluation of potential risks to future commercial workers is not warranted and will not be conducted.

2. **PAGE 6-18** According to the last paragraph in Section 6.6.2.6, risks from lead in soil were not calculated because the average concentration was less than the residential soil screening level. The text further indicates that, despite this, surface and subsurface samples near the NE quadrant of the site contained lead concentrations that "would likely be a concern for residents." Given the observed presence of lead at up to 17,000 mg/kg, outliers should be separated from the remaining data, and a hot spot analysis of risk should be performed for lead. The following receptors should be included in this evaluation: Current Construction Workers, Future Commercial Workers, and Future Child Residents.

   Response: *A hot spot analysis of lead for the area of swale 3, in the north quadrant of the site, will be performed. Risks associated with lead will be evaluated using the IEUBK model for a child resident, and the adult lead model for a "site worker" (i.e., the only model available to evaluate lead exposure to adults).*

3. **APPENDIX G, TABLE 3.4.RME** For lead, the arithmetic average concentration should be used to represent an exposure point concentration.

   Response: *The arithmetic average concentration of lead will be used to represent the lead exposure point concentration. Table 3.4.RME will be updated. This change to Table 3.4.RME will not affect the text in any of the HHRA sections.*

Comments from Mindi Snoparsky/EPA Region III:

1. **PAGE 8-1** The Conclusion section states that the Human Health Risk Assessment determined that "unacceptable risk was present for future adults...exposed to soil and groundwater". Section 8.2, Recommendations, states that remediation alternatives need to be studied for risks caused by soils and disregards the groundwater. Additionally, since the groundwater impacts the surface water, if the metals in the surface water/sediment are a problem, this may require some cleanup of the gw/soils as a source.

   Response: *Risks to human health resulting from exposure to groundwater are included in the risk assessment. While risks to human receptors are potentially unacceptable, they derive from the ingestion of arsenic-contaminated groundwater. Given the proximity of Site 28 to Mattawoman Creek and the very thin saturated thickness (less than 15 feet; shown on cross-sections in Figures 2-2 and 2-3), shallow groundwater in the vicinity of Site 28 is not a potable resource. One could not build a legal well in this unit, given Maryland well construction regulations, which require a minimum of 20 feet of isolation casing from ground surface. This unit is also not capable of meeting sustained yield requirements of Maryland well construction regulations; a well casing greater than 200 feet would likely be required. Accordingly,*

groundwater was not recommended for advancement in the CERCLA process to the Feasibility Study stage.

Risk from groundwater to ecological receptors will be evaluated in the Site 28 Baseline Ecological Risk Assessment, since groundwater does migrate to surface water swales and the Mattawoman Creek.

Comments from Simeon Hahn/NOAA (BTAG):

1. **PAGE 4-10 Section 4.6.3**, Nature and Extent of Contamination, Groundwater, Metals, states that groundwater is not used to determine ecological risk. It should be noted that groundwater is a source of metals to the nearshore sediments and surface water and thus need to be addressed in the management of ecological risk for these media (see also Section 5.2.2.6 Contaminant Fate and Transport - Zinc).

   Response: *Text for the last paragraph of Section 4.6.3 will be revised as follows:*

   "Groundwater is not used to determine ecological risk because ecological receptors are not exposed directly to groundwater. However, groundwater is a potential source of metals to the nearshore sediments and surface water, and thus will be considered in the management of ecological risk for these media."

2. **PAGE 7-21 Section 7.8.1**, Refinement of Conservative Exposure Assumptions, Assumptions and Approach, indicates that average chemical concentrations were used instead of the maximum concentrations as the exposure point concentration. Further clarification should be provided regarding how the average concentrations were determined. In particular, text should be provided as to whether a statistical evaluation was performed to evaluate whether the data exhibited a normal distribution. If a test for normality does not indicate a normal distribution, it is inappropriate to use an arithmetic average to represent a central tendency exposure estimate. It is noted that all of the media evaluated identified COCs that would be carried into Step 3, thus the impact on the risk assessment and the overall recommendation of the report may not be significant.

   Response: *Average chemical concentrations were calculated using the arithmetic average for each chemical/media group. The data were not statistically evaluated for normality prior to calculation of the arithmetic average. However, as the comment notes, all of the media evaluated identified COCs that would be carried forward. It is unlikely that using the arithmetic average resulted in excluding chemicals that warrant further evaluation because many samples contained elevated concentrations of the COCs identified. Thus, the evaluation should be conservative in that if the average is skewed at all, it would likely be skewed higher by including all samples in the average, even those on the high end of the scale that might fall outside the bell curve of a normally distributed data set.*

The following text will be added after the second paragraph in Section 7.8.1:

"Average chemical concentrations were calculated using the arithmetic mean for each chemical/media group. Although the data were not statistically evaluated for normality prior to calculation of the arithmetic mean, COCs were identified in all of the media evaluated and carried forward in the risk assessment process. Therefore, it is unlikely that using a simple arithmetic mean resulted in excluding chemicals that warrant further evaluation because many of the samples contained elevated concentrations of the COCs identified."

3. **PAGE 8-1** Section 8.2, Recommendations, states that soil and sediment remediation will be the focus of the feasibility study. Groundwater, as a source and migration pathway to sediments, also needs to be addressed. Restoration of shoreline habitat should be an integral component of the shoreline soil, groundwater, and sediment remedial alternatives.

Response: *The following text will be added at the end of Section 8.2:*

"Risk from groundwater to ecological receptors will be evaluated in the Site 28 Baseline Ecological Risk Assessment, since groundwater does migrate to surface water swales and the Mattawoman Creek system. Groundwater is also a potential source of metals to the nearshore sediments and surface water and thus will be considered in the management of ecological risk for these media. The Baseline Ecological Risk Assessment will be completed prior to the Site 28 Feasibility Study."

"Also, shoreline habitat is expected to be restored as part of any remedial action, as the current conditions are degraded and active erosion is occurring."

Comments from Jeff Morris/NAVFAC Washington:

1. **General** 1. While the tables within the sections were more legible (shading was previously too dark), the Appendix C Raw Data tables were so dark that the highlighted values were almost obliterated, rendering the tables nearly useless.

Response: *This is an effect of the photocopying; the shading is much lighter on the original copy. The copies of the Appendix C Raw Data Tables will be inspected before producing the final report.*

2. **General** 2. There were a couple of instances where the response to comments (e.g. my comment 6) failed to match the actual document. It appeared that additional text had been inserted, changing page and/or section numbers. Not only did this confuse the review somewhat, but, if new text was added without notice or explanation, a complete re-review of the document could be forced, something we want to avoid.

Response: *Comment is noted. The responses to comments in this memorandum will be inserted into the final document, and no further document changes will be made.*

Please note that for the reviewer's Comment 6, a section entitled "Sampling Nomenclature" was added to the document after the revised response to comments memorandum was submitted to the Navy. The reviewer's comment was addressed on page 3-4, Section 3.3.1.

3. **Section 4.7.3, page 4-11 -** In the last sentence of the third paragraph, change "precipitate our" to "precipitate out".

   Response: *The change will be made as suggested. The sentence will be revised to read,* "Other influences on surface water geochemistry include the availability of other anions more readily available in surface water than in groundwater that could, upon complexation, cause certain metals to precipitate out and others to go into solution."

Comments from Shawn Jorgensen/ NDWIH:

1. **Section 2.5.2, third paragraph.** This paragraph references IS28MW04 and IS28MW07 in the beginning of the paragraph. Later in the paragraph, samples IS28MM07-0605 and IS28MM07-0608 are discussed. Based on the station identification and sample identification nomenclature presented in Sections 3.2.1 and 3.2.2, IS28MM07 is a station, rather than a sample. Therefore, it cannot have the additional qualifiers of 0605 and 0608. I'm not sure how often this occurs throughout the document, but it appears that some changes need to be made, at least to this paragraph.

   Response: *We agree that IS28MW04 and IS28MW07 are station identification numbers. Two Shelby tube samples were collected from borings IS28MW04 and IS28MW07. As a result, the third to last and the last sentences in the third paragraph will be changed to read as follows:* "The extremely low conductivity of the sample collected from boring IS28MW07 would have required an unreasonably long period of time for four tests. Consequently, the hydraulic analysis of this sample was terminated after one conductivity test. The sample, however, does conform to ASTM D5084."

   It should be noted that this is the only paragraph where this type of error occurred.

2. **Section 3.2.2,** guide for sample identification system, Third Segment of Sample Number, Additional Qualifiers (sSample Ddepth, dDate). I believe that you have some extra letters inside the parentheses.

   Response: *The extra letters will be removed from inside the parentheses, and the label will be revised to read,* "Additional Qualifiers (Sample Depth, Date)".

3. **Page 6-23, Section 6.8,** last paragraph of section, first line. Please change the first "is" in the sentence to "if".

   Response: *The change will be made as suggested. The sentence will be revised to read,* "In summary, there would be unacceptable risks to future site residents if the site is used for future residential purposes."

4. **Appendix D** should include copies of the official State of Maryland Well Completion Reports for each well installed (not just the Permit to Drill Well).

   Response: *The State of Maryland Well Completion Reports will be included in Appendix D for each well installed, as suggested by the reviewer.*

Comments from Curtis DeTore/MDE:

1. **Section 1.2, Page 1-2, number 8.** The section title offered here is incorrect. Section 8 is actually titled "Summary and Recommendations".

   Response: *The change will be made as suggested. The title will be revised to read,* "Summary and Recommendations".